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10/679,070

10/02/2003

Mary C. Smoot

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EXAMINER

FEGGINS, KRISTAL J

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

314.

Office Action Summary

Application No.

10/679,070

Applicant(s)

SMOOT ET AL.

Examiner

K. Feggins

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-10, 12-20 and 22-25 is/are rejected.
- 7) ☒ Claim(s) 11 and 21 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>1/22/04</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Objections

1. Claim 13 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

With regards to claim 13, claim 13 does not contain any new limitations not presented in claim 1.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 13 does not contain any new limitations not presented in claim 1, therefore Examiner is unsure exactly what Applicant is claiming as the invention.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 7-10, 14, 15, 17-20, 23 & 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Wong (US 61132161).

Wong disclose the following claimed limitations:

* regarding claim 1, a method of applying an encapsulate material to an ink jet print cartridge/ink jet print head/ (Abstract, col 1, lines 9-28)

* providing a compliant stencil having at least one aperture (col 5, lines 17-53);

* providing an inkjet cartridge/ink jet print head/ having an outer portion (col 1, lines 9-28, col 4, lines 3-8, figs 2-4);

* stencil printing/thick film lamination/ an encapsulant material/solder ball, 68/ onto the outer portion of the ink jet print cartridge thereby forming a layer of encapsulate material/solder balls, 68/ (col 5, lines 17-53, figs 3-5).

* regarding claim 2, a flexible circuit, a heater chip and at least one electrical connection between the flexible circuit and the heater chip, wherein said outer portion of the inkjet print cartridge comprises the at least one electrical connection/traces/ (col 2, lines 37-46, col 4, lines 36-46, fig 3).

* regarding claim 3, wherein said flexible circuit includes at least one electrical trace and said heater chip includes at least one bond pad, and said at least one electrical connection comprises said at least one electrical trace coupled to said at least one bond pad (col 1, lines 36-50, col 2, lines 37-46, col 4, lines 36-46, fig 3).

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* regarding claim 4, wherein said at least one electrical trace is TAB bonded to said at least one bond pad (col 1, lines 36-50, col 2, lines 37-46, col 4, lns 36-46, fig 3).

* regarding claims 5 & 15, wherein said stencil/underfil layer, 60/ is made of a material selected from the group consisting of plastic, polyimide, fluoropolymer coated polyimide, stainless steel and combinations thereof (col 5, lines 17-20, 35-38).

* regarding claim 7, wherein said step of stencil printing aligning the stencil with a specific position on the print head cartridge such that the at least one aperture aligns with the outer portion of the ink jet print cartridge (col 5, lines 20-25, figs 3-4);

* depositing the encapsulant material on the stencil (col 5, lines 20-53, figs 3-5);

* extruding the encapsulant material through the at least one aperture and onto the outer portion of the inkjet print cartridge (col 5, lines 20-53, figs 3-5);

* regarding claims 8 & 18, wherein the encapsulant material comprises a polymeric material (col 5, lines 26-32).

* regarding claims 9 & 19, wherein said polymeric material is curable by actinic radiation, thermal energy or by a combination of actinic radiation and thermal energy (col 5, lines 20-25).

* regarding claims 10 & 20, exposing the stencil printed layer of encapsulant material to either actinic radiation, thermal energy or a combination thereof to substantially cure the polymeric material (col 5, lines 20-25).

* regarding claim 14, a method for protecting electrical traces on a flexible circuit and connections between the traces and one or more heater chip/nozzle plate assemblies for an inkjet printer comprising the steps of providing a stencil having at least one aperture (col 1, lines 36-50, col 2, lns 37-46, col 4, lns 36-46, col 5, lns 17-53, figs 3-5).

* applying an encapsulant material through the at least one aperture onto the electrical traces and the connections between the traces and the one or more heater chip/nozzle plate assemblies (col 2, lines 37-46, col 4, lines 36-46, col 5, lns 17-53, figs 3-5).

* regarding claim 17, wherein said step of applying an encapsulant material aligning the stencil such that the at least one aperture aligns with the electrical traces and the connections between the traces and the one or more heater chip/nozzle plate assemblies (col 5, lines 20-25, figs 3-4);

* depositing the encapsulant material on the stencil (col 5, lines 20-53, figs 3-5);

* extruding the encapsulant material through the at least one aperture and onto the electrical traces and the connections between the traces and the one or more heater

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chip/nozzle plate assemblies thereby forming a layer of encapsulant material (col 5, lines 20-53, figs 3-5);

* regarding claim 23, an inkjet print cartridge/ink jet print head/ (Abstract, col 4, lines 1-8);

* a flexible circuit including electrical traces (col 2, lines 37-46, col 4, lines 36-46, fig 3).

* a heater chip/nozzle plate assembly comprising a heater chip and a nozzle plate (fig 13, col 8, lines 53-64);

* electrical connections between the traces and the heater chip/nozzle plate assembly, wherein a stencil printed layer comprising an encapsulant material encapsulates the electrical connections, the barrier/passivation/ layer having a height of from about 0.001 to about 0.015 inches (col 1, lines 36-50, col 2, lines 37-46, col 4, lines 36-51, col 5, lines 20-53, figs 3-5);

* regarding claim 25, wherein the encapsulant material comprises a thermal cure epoxy adhesive (col 5, lines 29-32, 54-56)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6 & 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong (US 6,113,2161) in view of McDevitt et al. (US 6,649,403 B1).

Wong discloses all of the claimed limitations except for the following claimed limitations:

* regarding claims 6 & 16, wherein said stencil has a thickness of from about 0.001 to about 0.015 inches.

McDevitt et al. disclose the following claimed limitations:

* regarding claims 6 & 16, wherein said stencil has a thickness of from about 0.001 to about 0.015 inches (col 37, lines 29-57) for the purpose of achieving a desired thickness.

It would have been obvious at the time of the invention was made to a person having ordinary skill in the art to utilize a stencil thickness of from about 0.001 to about 0.015 inches, taught by McDevitt into Wong for the purposes of achieving a desired thickness.

8. Claims 12, 22 & 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wong (US 6,113,2161).

Wong discloses the following claimed limitations:

* regarding claims 12 & 22, wherein the stencil printed layer of encapsulant material has a height of the desired amount to fill cavity (col 5, lines 33-40).

* regarding claim 24, wherein the height of the layer is the desire amount to fill cavity (col 5, lines 33-40).

Wong does not disclose the following:

* regarding claims 12 & 22, wherein the stencil printed layer of encapsulant material has a height from about 0.001 to about 0.015 inches.

* regarding claim 24, wherein the height of the layer is from about 0.003 to about 0.009 inches.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize astencil printed layer of encapsulant material having a height from about 0.001 to about 0.015 inches; and where the height of the layer is from about 0.003 to about 0.009 inches for the purpose of providing the appropriate amount of paste/encapsulant material/ into the cavity, since it has been held that where the general condition of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Allowable Subject Matter

9. Claims 11 & 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The primary reason for allowance of claim 11 is the inclusion of a method steps of an ink jet print cartridge that includes an encapsulant material has a viscosity of from

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about 25,000 to about 240,000 centipoise as measured on a Brookfield cone and plate viscometer at 25°C at a shear rate of 2.0^{-1} s and a thixotropic index of from about 1 to 10 as measured at 2.0^{-1} and $20.0s^{-1}$. It is this method step found in the claims, as it is claimed in the combination of that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The primary reason for allowance of claim 21 is the inclusion of a method steps of an ink jet print cartridge that includes encapsulant material has a viscosity of from about 25,000 to about 240,000 centipoise as measured on a Brookfield cone and plate viscometer at 25°C at a shear rate of 2.0^{-1} s. It is this method step found in the claims, as it is claimed in the combination of that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wong (US 6386434 B1) discloses a method of attaching a first part to a mating part, wherein depositing a bondable film layer over a surface of a first part and a solderable pad on the surface.

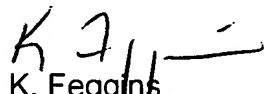
Communication With The USPTO

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Feggins whose telephone number is 571-272-2254. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


K. Feggins
March 18, 2004